

## **REMARKS**

Upon entry of the present amendment, claims 1-3, 5-7, 9-14, and 25 will remain pending in this application. Claims 4, 8, and 15-24 were previously cancelled. Applicant respectfully submits that no new matter is added by the present amendment.

Claims 1-3, 5-7, 9-14, and 25 stand rejected under 35 U.S.C. § 101. Claims 1, 3, 5-7, and 10-14 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent Application Publication No. 2005/0055355 (“Murthy et al.”) in view of U.S. Patent Application Publication No. 2005/0033733 (“Shadmon et al.”). Claims 2 and 9 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Murthy et al. in view of Shadmon et al. and further in view of U.S. Patent No. 6,643,633 (“Chau et al.”). Claim 25 stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Murthy et al. in view of U.S. Patent Application Publication No. 2003/0018616 (“Wilbanks et al.”).

### ***Interview Summary***

Applicant’s undersigned representative, Mr. Eiferman, and Examiner Cam Y. T. Truong participated in a telephonic interview on January 15, 2008, to discuss the rejections under 35 U.S.C. § 103.

### ***Rejections under 35 U.S.C. § 101***

Claims 1-3, 5-7, 9-14, and 25 stand rejected under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter.

Applicant has amended the remaining claims to recite a processor and a memory. Thus, Applicant respectfully submits that the claims are directed to statutory subject matter, namely, an apparatus, and requests that the rejection under 35 U.S.C. § 101 be reconsidered and withdrawn.

### ***Claim Objections***

Claims 9-14 stand objected to because they depend from claim 25, which is directed to “a computer system.” Claims 9-14 have been amended to also be directed to computer systems.

***Claim Rejections Under 35 U.S.C. § 103(a)***

Claims 1, 3, 5-7, and 10-14 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Murthy et al. in view of Shadmon et al. As to claim 1, Applicant understands the rejection to be based on the premise that Murthy et al. teaches a data store comprising a table of documents, each document having an associated document type in a hierarchy of document types, each document type having a type path that is a path from a root document type to the document type in the hierarchy of document types, the table comprising each document and its associated type path, and a document retrieval system that accesses the table in the data store to determine, for each document, if its associated type path will satisfy the query. Applicant understands the rejection to be further based on the premise that Shadmon et al. teaches a query processor that can follow every path that looks like it might match the query, thereby supplying the disclosure of a document retrieval system that generates query results comprising each type path that satisfies the query.

Applicant respectfully traverses the rejection. Claim 1, as amended, is directed to a computer system for processing a query. The computer system comprises:

- a processor;

- a memory;

- a data store comprising a table of documents, each document having an associated document type in a hierarchy of document types, each document type being associated with a type path that is a path from a root document type to the document type in the hierarchy of document types and that is constructed as a function of the document type, the table comprising a plurality of entries representing the documents and their respective associated type paths; and

- a document retrieval system that accesses the table in the data store to determine, for each document, if its associated type path will satisfy the query, and generates query results comprising each type path that satisfies the query, wherein the document retrieval system is configured to determine, for each document, whether its associated type path contains one of a value specified by the query and a prefix of a value specified by the query.

As recited in claim 1 and as disclosed at paragraph [0075] of the Specification (“For each type, the type value for each parent class is prefixed to the result of all previous prefix

operations or the original type if no prefix operations have been performed.”), the type path is constructed as a function of the document type. By contrast, Applicant submits that the path ID (PID) entries in Figure 5 of Murthy et al. are not constructed. Rather, they appear to be simply a set of integers that are used to represent a path from a root node to a node. As disclosed at paragraph [0034] of Murthy et al., the entries in the PID column of Figure 5 provide key values to the Path\_Index\_Table of Figure 4 to find the correct path. Further, it cannot be said that the PID entries are computed because, for example, node “c” can be seen to be a terminal node in paths “a.b.c” and “a.c.,” respectively corresponding to PID values of 4 and 5, per Figure 4. Accordingly, given a node name “c,” one cannot conclusively compute whether the correct PID value is 4 or 5. The correct path can only be determined by reference to the lookup tables depicted in Figures 4 and 5 of Murthy et al. By contrast, one of the advantages of the present invention is that “the type hierarchy can be discerned without the need for look-up techniques.” See paragraph [0089] of the instant Specification. Therefore, Applicant submits that Murthy et al. fails to teach at least the limitation “a data store comprising a table of documents, each document having an associated document type in a hierarchy of document types, each document type being associated with a type path that is a path from a root document type to the document type in the hierarchy of document types and that is computed as a function of the document type, the table comprising a plurality of entries representing the documents and their respective associated type paths.”

In addition, as recited in claim 1 and disclosed at paragraph [0079] of the instant Specification, the document retrieval system is configured to determine, for each document, whether its associated type path contains one of a value specified by the query and a prefix of a value specified by the query. Applicant respectfully submits that Murthy et al. fails to disclose this limitation as well.

Applicant understands Shadmon et al. to be cited as teaching at paragraph [0284] a query processor that can follow every path that looks like it might match the query, thereby supplying the disclosure of a document retrieval system that generates query results comprising each type path that satisfies the query. However, Applicant submits that Shadmon et al. fails to disclose a type path that is computed as a function of the document type, and therefore also fails to disclose at least the limitation “a data store comprising a table of documents, each document having an associated document type in a hierarchy of

document types, each document type being associated with a type path that is a path from a root document type to the document type in the hierarchy of document types and that is computed as a function of the document type, the table comprising a plurality of entries representing the documents and their respective associated type paths,” whether considered individually or in combination with Murthy et al.

Accordingly, claim 1 is patentable over Murthy et al. in view of Shadmon et al. Claims 3 and 5-7 depend from claim 1 and are therefore also patentable over Murthy et al. in view of Shadmon et al.

Claims 10-14 stand rejected as being allegedly unpatentable over Murthy et al. in view of Shadmon et al. However, Applicant respectfully submits that claims 10-14 depend from claim 25, which does not appear to have been rejected as being allegedly unpatentable over Murthy et al. in view of Shadmon et al. Rather, as discussed below, claim 25 stands rejected as being allegedly unpatentable over Murthy et al. in view of Wilbanks et al. Accordingly, the rejection of claims 10-14 will be addressed below in connection with the rejection of claim 25.

Claims 2 and 9 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Murthy et al. in view of Shadmon et al. and further in view of Chau et al. As to claim 2, the rejection is understood to be based on the premise that Chau et al. teaches user defined types at column 8, lines 30-35. However, Applicant submits that Chau et al. fails to disclose a type path that is computed as a function of the document type, and therefore also fails to disclose at least the limitation “a data store comprising a table of documents, each document having an associated document type in a hierarchy of document types, each document type being associated with a type path that is a path from a root document type to the document type in the hierarchy of document types and that is computed as a function of the document type, the table comprising a plurality of entries representing the documents and their respective associated type paths,” whether considered individually or in combination with Murthy et al. and Shadmon et al. Accordingly, claim 2 is patentable over Murthy et al. in view of Shadmon et al. and further in view of Chau et al.

Claim 9 stands rejected as being allegedly unpatentable over Murthy et al. in view of Shadmon et al. However, Applicant respectfully submits that claim 9 depends from claim 25, which does not appear to have been rejected as being allegedly unpatentable over Murthy et

al. in view of Shadmon et al. Rather, as discussed below, claim 25 stands rejected as being allegedly unpatentable over Murthy et al. in view of Wilbanks et al. Accordingly, the rejection of claim 9 will be addressed below in connection with the rejection of claim 25.

Claim 25 stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Murthy et al. in view of U.S. Patent Application Publication No. 2003/0018616 (“Wilbanks et al.”)

Applicant traverses the rejection. Claim 25 has been amended to recite that the document retrieval system is configured to generate an estimate of the selectivity of the query at least in part by:

- creating a histogram over the pre-computed values, the histogram having a plurality of elements representing document types in the hierarchy of document types, each element associated with a quantity of documents of the document type represented by that element,
- encoding the query to describe one or more documents to retrieve based on an encoded query type,

- for each element of the histogram, determining whether the encoded query type is a prefix of the document type represented by the element of the histogram,

- for each element of the histogram for which the encoded query type is determined to be a prefix of the document type represented by the element of the histogram, adding the associated quantity to a sum of matching elements,

- for each element of the histogram for which the encoded query type is determined not to be a prefix of the document type represented by the element of the histogram, adding the associated quantity to a sum of non-matching elements, and

- generating the estimate of the selectivity of the query as a function of the sums of matching elements and non-matching elements.

This amendment is supported in the Specification at least at paragraphs [0088] and [0090]-[0092] and in the drawings at least at Figures 8-9. Applicant respectfully submits that neither Murthy et al. nor Willbanks et al. discloses all of the limitations of claim 25 as amended, whether considered individually or in combination. Accordingly, claim 25 is patentable over Murthy et al. in view of Willbanks et al.

Claims 9-14 depend from claim 25 and are therefore patentable over Murthy et al. in view of Willbanks et al. by virtue of this dependency. With respect to claim 9, Chau et al. is

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cited as teaching user defined types. However, Chau et al. does not disclose the limitations of claim 25 as set forth above. Therefore, claim 9 is patentable over a hypothetical combination of Murthy et al., Willbanks et al., and Chau et al.

Based at least on the above remarks, Applicant respectfully submits that the currently pending claims are patentable over the prior art of record and requests reconsideration and removal of the rejections under 35 U.S.C. § 103(a).

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**CONCLUSION**

In view of the above amendments and remarks, Applicant respectfully submits that the present application is in condition for allowance. Reconsideration of the application is respectfully requested.

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